

SUMMARY OF RESULTS

FIBI043 - Third River



1. Stream Name: Third River
2. Sampling Date: 06-18-2002

3. Sampling Location: West Passaic Ave (40 50 00.36; -74 10 46.52)

4. Municipality: Bloomfield Twp.

5. County: Essex

6. Watershed Management Area: 4

7. Contributing Drainage Area:
8. Electrofishing Gear:
9. FIBI Score and Rating:
10. Habitat Score and Rating:

11. Fishable Species Present: Yes

12. Relevant AMNET¹ Station Data

Proximity of FIBI station to AMNET station: AN0292a

AMNET Rating: Round 1 – NA; Round 2 – MODERATE

13. Stream Chemistries

Dissolved Oxygen: 9.2 mg/L Temperature: 17.1 $^{\circ}$ C pH: 6.7

Conductivity: 740 µmhos/cm

14. Number of Fish with Anomalies:

15. Length of Stream Segment Sampled:150 Meters16. Water Clarity:Clear17. Average Open Forest Canopy:22%18. Discharge:13.96 ft.3/sec

19. Substrate: 40% Gravel and Sand, 40% Cobble, 0% Boulder, 0% Clay, 20% Silt

20. Habitat: 10% Riffle, 15% Run, 75% Pool

21. Snags: Yes
22. Periphyton: Slight
23. Submerged Aquatic Vegetation: No

24. Other Observations: Missed disproportional amount of tesselated darters; lots of debris and trash

25. Number of Fish Species Identified:726. Total Number of Fish Collected:490

¹ AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.

FIBI043 06-18-2002

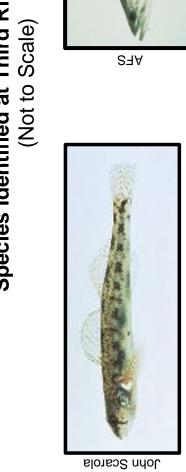
Third River

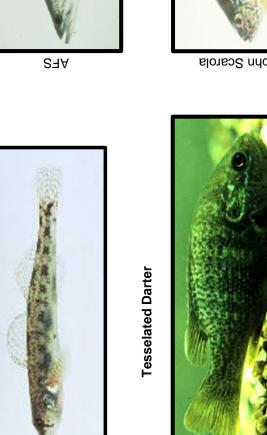
LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Tesselated Darter	Etheostoma olmstedi	216	
Mummichog	Fundulus heteroclitus	129	
White Sucker*	Catostomus commersoni	61	
Green Sunfish*	Lepomis cyanellus	49	2.0-3.9
Blacknose Dace	Rhinichthys atratulus	25	
Pumpkinseed*	Lepomis gibbosus	9	1.4-3.1
Largemouth Bass*	Micropterus salmoides	1	3.9

^{*} Regulated as a fishable species under current New Jersey Fish and Wildlife codes

Species Identified at Third River (FIBI043) (Not to Scale)

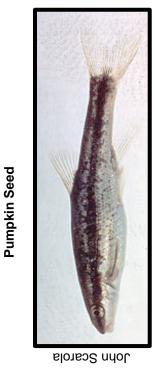




Largemouth Bass



Konrad Schmidt





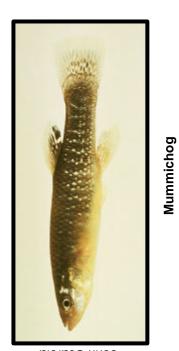


Green Sunfish

White Sucker

Blacknose Dace

Species Identified at Third River (FIBI043) (Not to Scale)



John Scarola

FIBI043 - Third River @ W. Passaic Avenue Date Sampled - 6/18/2002	Excellent	Good	Fair	Poor
			Score	
# of Fish Species			5	
# of Benthic Insectivorous Species (BI)			5	
# of Trout and Centrarchid Species (trout, bas	s, sunfish, crappie)		5	
# of Intolerant Species (IS)			1	
Proportion of Individuals as White Suckers			3	
Dranautian of Individuals on Constaliate (
Proportion of Individuals as Generalists (carp, c	reek chub, banded killifish,		5	
goldfish, fathead minnow, green sunfish)	rinide (Land DI)			
Proportion of Individuals as Insectivorous Cyp	rinius (i and bi)		1	
Proportion of Individuals as Trout	*whichever gives better	rscore		
OR	Willowor gives selle	00010		
Proportion of Individuals as Pisciviores (Exclud	ding American Eel)*		1	
(,			
Number of Individuals in Sample			5	
Proportion of Individuals w/disease/anomalies	(excluding blackspot)		5	
Total			36	

Stream Rating

45-50 Excellent
 37-44 Good
 29-36 Fair
 10-28 Poor

HABITAT ASSESSMENT FOR HIGH GRADIENT STREAMS

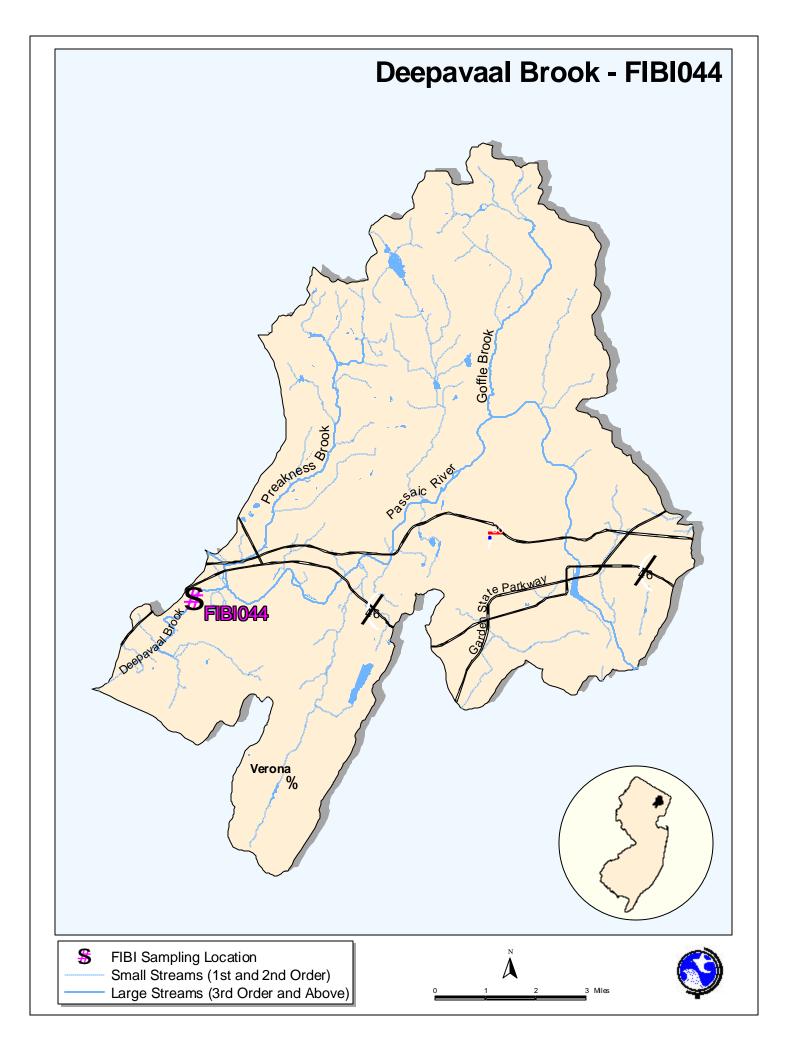
Third River (FIBI043) – 6/18/02

Lapinum Substrate Colonization and laborate and indicated and an indicated an indicat	ENT FOR III	GH GRADIENT S		·	IB1043) – 6/18/02
Legislamial Substrate Available Cover Avai					
Lapinum Substrate Colonization and laborate and indicated and an indicated an indicat		Optimal	Suboptimal	Marginal	Poor
2. Embeddedness		favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new	well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may	habitat availability less than desirable; substrate frequently	
Particles are 0.2 25% surrounded by fine sediment. Layering of the sediment.	SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. VedecityDepth Regimes Grant School well-specified School well-specified	2. Embeddedness	particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche	particles are 25-50% surrounded	particles are 50-75% surrounded	particles are more than 75%
Second S	SCORE 9	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Little or no enlargement of islands or point have and less than information of islands or point have and less than of states and the property of the bottom affected, saight deposition in pools. Score 13		present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	(if fast-shallow is missing, score lower than if missing other regimes).	present (if fast-shallow or slow- shallow are missing, score low).	regime (usually slow-deep).
4. Sediment Deposition Signature of point have and less than 5% (CaPbe for low-gradient) 6% (Blow for low-gradient) 5% (Blow for low-gradient) 6% (Blow	SCORE 8	20 19 18 17 16	15 14 13 12 11		5 4 3 2 1 0
Water falls 25-75% of the available channel, and/or riffle available spatially and the set and the stream is a ratio of stream hash as the channel; and/or part and the part and the part and the pa	4. Sediment Deposition	islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected	formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight	gravel, sand or fine sediment on old and new bars; 30-50% (50- 80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools	increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment
Score 14 Danks, and minimal amount of the stream elastifactic is exposed.	SCORE 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Channelization may be extensive; embankments or shoring absent or minimal; stream with normal pattern. Channelization present, usually in areas of bridge absent or minimal; stream with normal pattern. SCORE 12 Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream s?-1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. SCORE 8 SCORE 8 SCORE 6 (RB) P. Bank Stability (core each bank) SCORE 6 (RB) P. Bank Vegetative Protection (score each bank) SCORE 5 (RB) Roght 10 9 8 7 6 5 4 3 2 1 0 Moderately stable; infrequent, and a same as of erosion. SCORE 5 (RB) More than 90% of the stream has a ratio of evident, almost all plants allowed to grow moved mining. It almost all plants allowed to generally all rot the stream is problems. <5% of bank in reach has areas of erosion. SCORE 5 (RB) Roght 10 9 8 7 6 5 4 3 2 1 0 Moderately stable; infrequent, and of stream has a reas of erosion. SCORE 5 (RB) Roght 10 9 8 7 6 5 4 3 2 1 0 Moderately stable; infrequent, and of stream has a reas of erosion. SCORE 5 (RB) Roght 10 9 8 7 6 5 4 3 2 1 0 Moderately stable; infrequent, and of stream has a reas of erosion. SCORE 5 (RB) Roght 10 9 8 7 6 5 4 3 2 1 0 Moderately stable; infrequent, and of stream has a reas of erosion. SCORE 5 (RB) Roght 10 9 8 7 6 5 4 3 2 1 0 Moderately stable; infrequent, and of stream has a reas of erosion. SCORE 5 (RB) Roght 10 9 8 7 6 5 4 3 2 1 0 Moderately stable; infrequent, and of stream has surfaces covered by native vegetation, including trees, under story shruls, or nonwoody minimal to not evident; almost all plants allowed to grow moved minimal, relation in word properties to expectation, including trees, under story shruls, or nonwoody minimal to not evident; almost all plants allowed to grow moved the stream has a reason of expectation in word plants allowed to provide the stream has surfaces covered by native veg		banks, and minimal amount of channel substrate is exposed.	channel; or <25% of channel substrate is exposed.	available channel, and/or riffle substrates are mostly exposed.	mostly present as standing pools.
absent or minimal; stream with normal pattern. absent or minimal; stream with normal pattern.	SCORE 14	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends) 7. Frequency of Riffles (or bends) 7. Frequency of Riffles (or bends) 8. Bank Stability (soore each bank) 8. Bank Stability (soore each bank) 8. Bank Stability (soore each bank) 8. CORE 6 (LB) 9. Bank Vegetative Protection (score each bank) 8. CORE 5 (LB) 8. CORE 5 (LB) 8. CORE 5 (LB) 8. CORE 5 (LB) 8. CORE 5 (RB) 8. CORE 5 (RB) 8. CORE 5 (RB) 8. CORE 5 (RB) 8. CORE 10 9 8 7 6 5 4 3 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6. Channel Alteration	absent or minimal; stream with	usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization	embankments or shoring structures present on both banks; and 40 to 80% of stream reach	cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered
7. Frequency of Riffles (or bends) Production Frequent; ratio of distance between riffles divided by the width of the stream is between riffles divided by the width of the stream is between riffles divided by the width of the stream is between riffles divided by the width of the stream is between riffles divided by the width of the stream is between riffles divided by the width of the stream is between riffles divided by the width of the stream is between riffles divided by the width of the stream is a ratio of >25. SCORE 5	SCORE 12	20 19 18 17 16		10 9 8 7 6	5 4 3 2 1 0
Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE 6 (LB) SCORE 6 (RB) Bank Vegetative Protection (score each bank) Note: determine left or right side by facing downstream: SCORE 5 (LB) SCORE 5 (RB) CORE 6 (RB) CORE 6 (RB) CORE 7 (RB) COR	7. Frequency of Riffles (or	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE 6 (LB) SCORE 6 (RB) Left 10 9 8 7 6 5 4 3 2 1 0 More than 90% of the streambank surfaces covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. SCORE 5 (RB) More than 90% of the streambank surfaces covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. SCORE 5 (RB) More than 90% of the streambank surfaces covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. SCORE 5 (RB) More than 90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption obvious; patches of bare soil or closely cropped vegetation is very high; vegetation common; less than one-half of the potential plant stubble height remaining. SCORE 5 (RB) Width of riparian zone >18 meters; human activities have impacted zone only minimally. More than 90% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation is very high; vegetative extent; more than one-half of the potential plant stubble height remaining. More than 90% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation is very high; vegetative extent; more than one-half of the potential plant stubble height remaining. More th	SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
SCORE 6 (LB) SCORE 6 (RB) Left 10 9 8 7 6 5 4 3 2 1 0 More than 90% of the streambank surfaces covered by native vegetation (score each bank) Protection (score each bank) More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. SCORE 5 (LB) SCORE 5 (RB) Left 10 9 8 7 6 5 4 3 2 1 0 More than 90% of the streambank surfaces covered by negreat vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption bottonial to any great extent; more than one-half of the potential plant stubble height remaining. SCORE 5 (LB) SCORE 5 (RB) Width of riparian zone >18 meters; human activities have impacted zone. Left 10 9 8 7 6 5 4 3 2 1 0 Width of riparian zone <6 12 meters; human activities have impacted zone. Left 10 9 8 7 6 5 4 3 2 1 0 Width of riparian vegetation due to human activities.	each bank) Note: determine left or right side by facing	or bank failure absent or minimal; little potential for future	small areas of erosion mostly healed over. 5-30% of bank in	bank in reach has areas of erosion; high erosion potential	"raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-
More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. SCORE _5_ (LB) SCORE _5_ (RB) 10. Riparian Vegetative Zone Width (score each bank riparian zone) SCORE _2_ (LB) SCORE	SCORE6 (LB)				
surfaces and immediate riparian zone covered by native vegetation (score each bank) surfaces and immediate riparian zone covered by native vegetation (score each bank) surfaces covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. SCORE _5_ (LB) SCORE _5_ (RB) SCORE _5_ (RB) SCORE _5_ (RB) Left _ 10 _ 9 _ 8 _ 7 _ 6 _ 5 _ 4 _ 3 _ 2 _ 1 _ 0 _ 0 _ 0 _ 0 _ 0 _ 0 _ 0 _ 0 _ 0	SCORE6 (RB)				
SCORE5(RB) Right 10 9 8 7 6 5 4 3 2 1 0 Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. SCORE2(LB) Right 10 9 8 7 6 5 4 3 2 1 0 Width of riparian zone 6-12 meters; human activities have impacted zone only minimally. SCORE2(LB) Right 10 9 8 7 6 5 4 3 2 1 0	Protection (score each bank)	surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. SCORE2_ (LB) Width of riparian zone >18 meters; human activities have impacted zone only minimally. lawns, or crops) have not impacted zone. Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. Width of riparian zone 6-6 meters; human activities have impacted zone a great deal. SCORE2_ (LB) Undth of riparian zone 6-12 meters; human activities have impacted zone a great deal. SCORE3 (LB) Undth of riparian zone 6-12 meters; human activities have impacted zone a great deal. SCORE3 (LB) Undth of riparian zone 6-12 meters; human activities have impacted zone a great deal. SCORE3 (LB) Undth of riparian zone 6-12 meters; human activities have impacted zone a great deal. SCORE3 (LB) Undth of riparian zone 6-12 meters; human activities have impacted zone a great deal. SCORE3 (LB) Undth of riparian zone 6-12 meters; human activities have impacted zone a great deal. SCORE3 (LB) Undth of riparian zone 6-12 meters; human activities have impacted zone a great deal. SCORE3 (LB) Undth of riparian zone 6-12 meters; human activities have impacted zone a great deal. SCORE3 (LB) Undth of riparian zone 6-12 meters; human activities have impacted zone a great deal.					
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
31 (M) 3 (M) 1 (R) M	SCORE2 (LB) SCORE5 (RB)	Left 10 9 Right 10 9	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0

HABITAT SCORE

101

HABITAT SCORES	VALUE
OPTIMAL	160 - 200
SUB-OPTIMAL	110 – 159
MARGINAL	60 - 109
POOR	< 60





SUMMARY OF RESULTS

FIBI044 - Deepavaal Brook



1. Stream Name: Deepavaal Brook 2. Sampling Date: 06-11-2002

3. Sampling Location: Daniel Road (40 53 02.84; -74 16 40.12)

4. Municipality: Fairfield Twp. 5. County: Essex 6. Watershed Management Area:

7. Contributing Drainage Area: 5.6 Square Miles 8. Electrofishing Gear: 2 Backpack 9. FIBI Score and Rating: 36 - Fair 10. Habitat Score and Rating: 76 - Marginal Yes

11. Fishable Species Present:

12. Relevant AMNET¹ Station Data:

Proximity of FIBI station to AMNET station: 0.76 mi upstream AN0271

AMNET Rating: Round 1 - MODERATE; Round 2 - MODERATE

13. Stream Chemistries

Dissolved Oxygen: 6.1 mg/L 18.8 °C Temperature: pH: 6.85

Conductivity: 583 µmhos/cm

14. Number of Fish with Anomalies:

15. Length of Stream Segment Sampled: 150 Meters 16. Water Clarity: Slightly Turbid

17. Average Open Forest Canopy: 29% 18. Discharge:

19. Substrate: 45% Gravel and Sand, 5% Cobble, 0% Boulder, 0% Clay, 50% Silt

20. Habitat: 10% Riffle, 40% Run, 50% Pool

21. Snags: Yes 22. Periphyton: None 23. Submerged Aquatic Vegetation: Yes

24. Other Observations:

25. Number of Fish Species Identified: 11 26. Total Number of Fish Collected: 92

 $^{^1}$ AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.

FIBI044 06-11-2002 Deepavaal Brook

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Bluegill*	Lepomis macrochirus	34	1.8-3.5
White Sucker*	Catostomus commersoni	20	
Eastern Mudminnow	Umbra pygmaea	14	
Green Sunfish*	Lepomis cyanellus	8	1.8-4.5
Tesselated Darter	Etheostoma olmstedi	5	
Pumpkinseed*	Lepomis gibbosus	3	3.0-3.9
Redfin Pickerel*	Esox americanus americanus	3	2.4-9.3
Yellow Bullhead*	Ameiurus natalis	2	4.7-6.7
Banded Killifish	Fundulus diaphanus	1	
Fathead Minnow	Pimephales promelas	1	
Largemouth Bass*	Micropterus salmoides	1	3.0

^{*} Regulated as a fishable species under current New Jersey Fish and Wildlife codes

Species Identified at Deepavaal Brook (FIBI044)

(Not to Scale)



Largemouth Bass



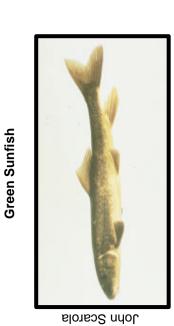


Redfin Pickerel

John Scarola



Konrad Schmidt



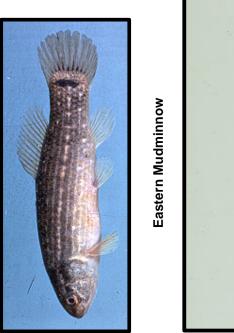
Bluegill

White Sucker

Species Identified at Deepavaal Brook (FIBI044)

(Not to Scale)







John Scarola



John Scarola



Yellow Bullhead

William Roston



Fathead Minnow

Banded Killifish

John Scarola

Pumpkinseed



Stormwater runoff continues to impact the quality of the State's waterbodies by eroding banks and flushing pollutants, including floating debris (see below), into surface waters.



The amount of floating debris trapped behind these fallen branches highlights the impact that uncontrolled stormwater discharge has on waterbodies in urbanized areas.

# of Fish Species 5 # of Benthic Insectivorous Species (BI) 5 # of Trout and Centrarchid Species (trout, bass, sunfish, crappie) 5 # of Intolerant Species (IS) 1 Proportion of Individuals as White Suckers 3 Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish) Proportion of Individuals as Insectivorous Cyprinids (I and BI) 1 Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Pisciviores (Excluding American EeI)* 3 Number of Individuals in Sample 5	FIBI044 - Deepavaal Brook @ Daniel Road Date Sampled - 6/11/2002	Excellent	Good	Fair	Poor
# of Benthic Insectivorous Species (BI) # of Trout and Centrarchid Species (trout, bass, sunfish, crappie) # of Intolerant Species (IS) Proportion of Individuals as White Suckers Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish) Proportion of Individuals as Insectivorous Cyprinids (I and BI) Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Pisciviores (Excluding American EeI)* 3 Number of Individuals in Sample				Score	
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Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish) Proportion of Individuals as Insectivorous Cyprinids (I and BI) 1 Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Pisciviores (Excluding American EeI)* 3 Number of Individuals in Sample	Describes of hadicidade as White Cookers				
goldfish, fathead minnow, green sunfish) Proportion of Individuals as Insectivorous Cyprinids (I and BI) Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Pisciviores (Excluding American EeI)* Number of Individuals in Sample 3	Proportion of Individuals as white Suckers			3	
goldfish, fathead minnow, green sunfish) Proportion of Individuals as Insectivorous Cyprinids (I and BI) Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Pisciviores (Excluding American EeI)* Number of Individuals in Sample 3	Proportion of Individuals as Generalists (carp creek	chuh handed killifish		5	
Proportion of Individuals as Insectivorous Cyprinids (I and BI) Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Pisciviores (Excluding American Eel)* Number of Individuals in Sample 3	•	chab, banaca kiiinsii,		J	
Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Pisciviores (Excluding American Eel)* Number of Individuals in Sample 3		ds (I and BI)		1	
OR Proportion of Individuals as Pisciviores (Excluding American Eel)* Number of Individuals in Sample 3	,	,			
Proportion of Individuals as Pisciviores (Excluding American Eel)* Number of Individuals in Sample 3	Proportion of Individuals as Trout *wh	ichever gives better	score		
Number of Individuals in Sample 3	OR				
	Proportion of Individuals as Pisciviores (Excluding	American Eel)*		3	
Proportion of Individuals w/dispass/anomalies (oveluding blacksnot) 5	Number of Individuals in Sample			3	
Proportion of Individuals w/disease/anomalies (evoluting blacksnot) 5					
r Toportion of Individuals w/disease/anomalies (excluding blackspot)	Proportion of Individuals w/disease/anomalies (ex	cluding blackspot)		5	
			ĺ		
Total 36	Total			36	

Stream Rating

45-50 Excellent
 37-44 Good
 29-36 Fair
 10-28 Poor

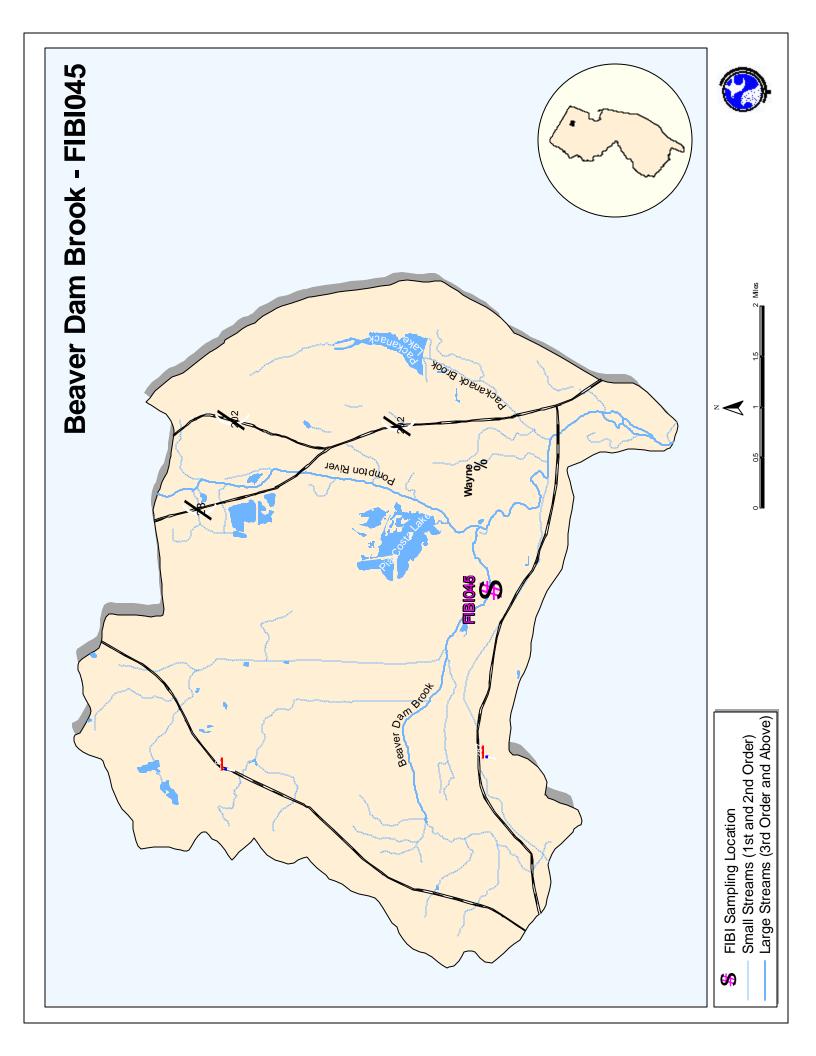
HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS Deepavaal Brook (FIBI044) – 6/11/02

		Condition	Category	
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 2	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 0	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow- shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 7	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 13	20 19 18 17 16	is not present. 15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 2	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
SCORE5 (LB) SCORE4 (RB)	Left 10 9 Right 10 9	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE7 (LB) SCORE5 (RB)	Left 10 9 Right 10 9	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE4 (LB) SCORE3 (RB)	Left 10 9 Right 10 9	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0
JUNEJ_ (KD)	ragin 10 9	0 / 0	3 4 3	2 1 U

HABITAT SCORE

76

HABITAT SCORES	VALUE
OPTIMAL	160 - 200
SUB-OPTIMAL	110 – 159
MARGINAL	60 - 109
POOR	< 60





SUMMARY OF RESULTS

FIBI045 - Beaver Dam Brook



1. Stream Name: Beaver Dam Brook

2. Sampling Date: 07-10-2002

3. Sampling Location: off Park Ave (40 55 26.81; -74 17 59.92)

4. Municipality: Lincoln Park
5. County: Morris
6. Watershed Management Area: 3

7. Contributing Drainage Area: 12.5 Square Miles

8. Electrofishing Gear:
9. FIBI Score and Rating:
10. Habitat Score and Rating:
11. Fishable Species Present:

Backpack
32 - Fair
86 - Marginal
Yes

12. Relevant AMNET¹ Station Data

Proximity of FIBI station to AMNET station: 1.43 mi upstream AN0269

AMNET Rating: Round 1 – MODERATE; Round 2 – MODERATE

13. Stream Chemistries

Dissolved Oxygen: 4.6 mg/L Temperature: 21.7 0 C pH: 7.08

Conductivity: 404 µmhos/cm

14. Number of Fish with Anomalies:

15. Length of Stream Segment Sampled: 150 Meters
16. Water Clarity: Turbid
17. Average Open Forest Canopy: 27.3%
18. Discharge: 7.21 ft. 3/sec

19. Substrate: 60% Gravel and Sand, 20% Cobble, 0% Boulder, 10% Clay, 10% Silt

20. Habitat: 20% Riffle, 30% Run, 50% Pool

21. Snags:Yes22. Periphyton:Slight23. Submerged Aquatic Vegetation:Yes

24. Other Observations: four storm drains, trash, 25 meter of riprap rock wall

25. Number of Fish Species Identified:26. Total Number of Fish Collected:212

¹ AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.

FIBI045 07-10-2002

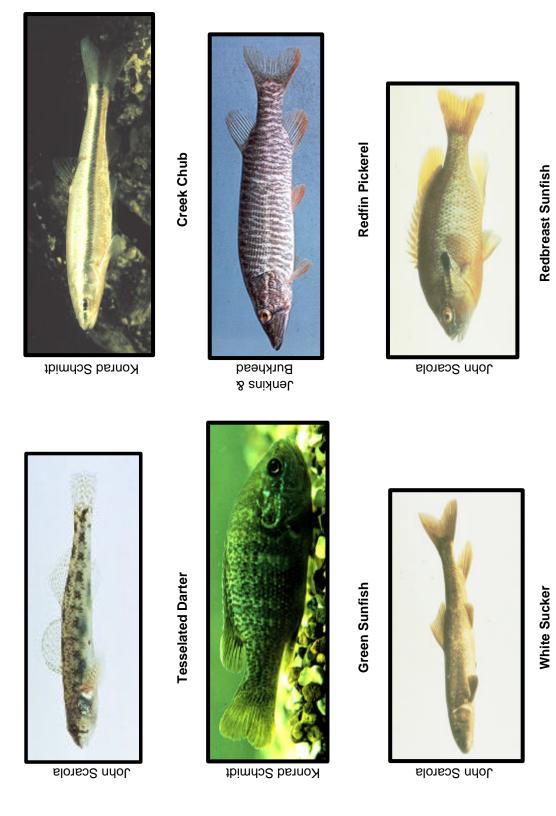
Beaver Dam Brook

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Tesselated Darter	Etheostoma olmstedi	131	
Green Sunfish*	Lepomis cyanellus	27	1.4-4.5
White Sucker*	Catostomus commersoni	26	
Creek Chub	Semotilus atromaculatus	13	
Redfin Pickerel*	Esox americanus americanus	10	3.1-7.5
Bluegill*	Lepomis macrochirus	2	2.8
Redbreast Sunfish*	Lepomis auritus	2	4.1-5.5
Eastern Mudminnow	Umbra pygmaea	1	

^{*} Regulated as a fishable species under current New Jersey Fish and Wildlife codes

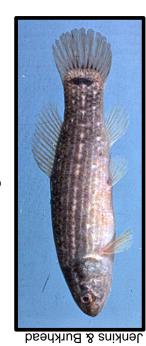
Species Identified at Beaver Dam Brook (FIBI045) (Not to Scale)



Species Identified at Beaver Dam Brook (FIBI045) (Not to Scale)



Bluegill



Eastern Mudminnow

FIBI045 - Beaver Dam Brook off Park Avenue Excellent Good Date Sampled - 7/10/2002	Fair	Poor
	Score	
# of Fish Species	5	
# of Benthic Insectivorous Species (BI)	3	
# of Trout and Centrarchid Species (trout, bass, sunfish, crappie)	3	
" of Front and Gentralonia Openies (front, bass, samish, srapple)		
# of Intolerant Species (IS)	1	
Proportion of Individuals as White Suckers	3	
Proportion of Individuals as Generalists (carp, creek chub, banded killifish,	5	
goldfish, fathead minnow, green sunfish)		
Proportion of Individuals as Insectivorous Cyprinids (I and BI)	1	
Proportion of Individuals as Trout *whichever gives better score		
OR		
Proportion of Individuals as Pisciviores (Excluding American Eel)*	3	
Number of Individuals in Sample	3	
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5	
Troportion of materiadate wideocoordinemate (excluding blackspot)		
Total	32	

Stream Rating

45-50 Excellent
 37-44 Good
 29-36 Fair
 10-28 Poor

HABITAT ASSESSMENT FOR HIGH GRADIENT STREAMS Beaver Dam Brook (FIBI045) - 7/10/02

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status SCORE 18	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 19 18 17 16	Water fills >75% of the available channel; or <25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0
SCORE 18	Channelization or dredging	Some channelization present,	Channelization may be extensive;	Banks shored with gabion or
6. Channel Alteration	chainentzation to dreuging absent or minimal; stream with normal pattern.	usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 7	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
SCORE2 (LB) SCORE4 (RB)	Left 10 9 Right 10 9	8 7 6 8 7 6	5 4 3 5 4 3	2 1 0 2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE2_ (LB)	Left 10 9	8 7 6 8 7 6	5 4 3	2 1 0 2 1 0
SCORE5 (RB) 10. Riparian Vegetative Zone Width (score each bank riparian	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not	8 7 6 Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	5 4 3 Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	2 1 0 Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
zone) SCORE2 (LB)	impacted zone. Left 10 9	8 7 6	5 4 3	2 1 0

HABITAT SCORE

86

HABITAT SCORES	VALUE
OPTIMAL	160 - 200
SUB-OPTIMAL	110 – 159
MARGINAL	60 - 109
POOR	< 60